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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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CHRISTIE, PARKER & HALE, LLP
350 WEST COLORADO BOULEVARD
SUITE 500
PASADENA, CA 91105

EXAMINER

KIM, ELLEN E

ART UNIT PAPER NUMBER

2874

DATE MAILED: 09/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/010,728

Applicant(s)

GOLDSTEIN, MARK K.

Examiner

Ellen E Kim

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 16-18, 24-27 and 37-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9, 10, 13-15, 19, 20, 30, 33, 40 and 41 is/are rejected.
- 7) ☒ Claim(s) 8, 11, 12, 21-23, 28, 29, 31, 32 and 34-36 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3. 6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

This application contains claims directed to the following patentably distinct species of the claimed invention:

an EFA sensor and the method of it directed to Group I of claims 1-15, 19-23, and 28-36;

an optical sensor having two reflective surfaces and the method of it directed to Group II of claims 16-18, and 24-27; and

an optical sensor having two waveguides that change its index of refraction directed to Group III of claims 37-39.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 40 and 41 are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Art Unit: 2874

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Ann Wang on 9/11/03 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-15, 19-23, and 28-36. Affirmation of this election must be made by applicant in replying to this Office action. Claims 16-18, 24-27, and 37-39 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claims 1-15, 19-23, 28-36, and 40-41 are examined in this application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7, and 33 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Zhou et al [USPAT 5,308,771].

Zhou et al disclose chemical sensors to detect carbon monoxide comprising a porous substrate with a sensing reagent comprising palladium chloride [column 1, lines 46-47,

Art Unit: 2874

column 2, lines 1-10]. Zhou et al show at column 2, lines 23-28 that the pore size is about 50-200 angstroms, and the thickness of the substrate can be made up to 200 μ . Zhou et al show at column 4, lines 46-51 that microprocessor can be utilized. It is clear that since the coating is thin, the evanescent wave absorption is inherently placed in the device.

Claims 5-7, 9, 10, and 33 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Goldstein et al [USPAT 5,618,493, Applicant's admitted prior art].

Goldstein et al disclose carbon monoxide sensor comprising a porous substrate [abstract] with sensing material containing Palladium salts [see column 6, lines 13-48], a photon source 12 [see column 5, lines 28-36], and a photon detector 22. Goldstein et al teach at column 6, lines 55-64 that the substrate can be silicon dioxide.

Examiner notes that since the coating layer is very thin, evanescent field absorption is inherently occurred in the device.

Claim 13 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by Goldstein et al [USPAT 6,429,019].

Goldstein et al disclose a carbon monoxide detection device and the method of it comprising a porous transparent layer [column 18, lines 1-18] which is made by starting with a silicon alkoxide [column 14, lines 32-46], converting the silicon alkoxide into a stable organometallic acid, mixing with solvent, drying, and heating.

Art Unit: 2874

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 14, 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldstein et al [USPAT 6,429,019] and in view of Nakanishi et al [USPAT 6,207,098].

Goldstein et al discloses every aspect of claimed invention except for the soluble polymer pore forming agent.

Nakanishi et al disclose a method for producing porous inorganic material comprising the soluble polymer pore forming agent [abstract].

It would have been obvious to the ordinary skilled person in the art at the time the invention was made to modify Goldstein et al's device to include the soluble polymer pore forming agent as shown in Nakanishi et al's reference for the purpose of optimal median pore diameter and pore size distribution as narrow as possible [column 2, lines 14-18].

Art Unit: 2874

Claims 1, 20, 30, 40, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldstein et al [USPAT 5,618,493, Applicant's admitted prior art].

Goldstein et al disclose carbon monoxide sensor comprising a porous substrate [abstract] with sensing material containing Palladium salts [see column 6, lines 13-48], a photon source 12 [see column 5, lines 28-36], and a photon detector 22.

Goldstein et al discloses every aspect of claimed invention except for the substrate less than one micron in any dimension, and a microprocessor.

Goldstein et al teach at column 8, lines 33-41 that the pore diameter is in the range of from 1.5 to 100 nanometer. Therefore, it is clear that the porous substrate can be small enough as long as the substrate is big enough to have some pores.

It would have been obvious to the ordinary skilled person in the art at the time the invention was made to modify Goldstein et al's device to have a porous substrate which is less than one micron in any dimension for the purpose of smaller size of the device, and less manufacturing cost of the device.

It would further have been obvious to the ordinary skilled person in the art at the time the invention was made to modify Goldstein et al's device to have a microprocessor to control the photon source and the photon detector for the purpose of optimum evaluation of the existence of the carbon monoxide.

Claims 40 and 41 are further rejected under 35 U.S.C. 103(a) as being unpatentable over Zhou et al [USPAT 5,308,771].

Zhou et al disclose chemical sensors to detect carbon monoxide comprising a porous substrate with a sensing reagent comprising palladium chloride [column 1, lines 46-47,

Art Unit: 2874

column 2, lines 1-10]. Zhou et al show at column 2, lines 23-28 that the pore size is about 50-200 angstroms, and the thickness of the substrate can be made up to 200 μ . Zhou et al show at column 4, lines 46-51 that microprocessor can be utilized.

Zhou et al discloses every aspect of claimed invention except for the substrate less than one micron in any dimension.

It would have been obvious to the ordinary skilled person in the art at the time the invention was made to modify Zhou et al's device to have a porous substrate which is less than one micron in any dimension for the purpose of smaller size of the device, and less manufacturing cost of the device.

Allowable Subject Matter

Claims 8, 11, 12, 21-23, 28, 29, 31, 32, 34-36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose or suggest an apparatus that measures the identity and concentration of gases and vapors comprising all the specific elements with the specific combination including a ring waveguide coated with a sensing material, wherein a mean to couple photons from the straight waveguide to the ring waveguide and remove a portion of those photons and then detect a target gas by monitoring the amount of photons at the end of the straight waveguide as set forth in claims 8, 21; including the steps of coating the waveguide with a porous silica layer between 20 nm and 200 nm and then coating the porous silica surface with a sensing agent as set forth in claim 11; including a means to switch the gas from the reformat stream to a air stream and back

Art Unit: 2874

periodically as set forth in claims 28; and including all the details as set forth in claims 31 and 32.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Further references of interest are cited on Form PLO-892, which is attachment to this office action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ellen Kim whose telephone number is (703) 308-4946. The examiner can normally be reached on Monday and Thursday.

Ellen E. Kim
Primary Examiner



September 15, 2003/EK